PHYSIKALISCHES KOLLOQUIUM

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Thema: Novel Theory of the Structure of the Electron

Zeit und Ort: Dienstag, 11.1.2022, 16:40 Uhr / Online-Kolloquium in Zoom
Zoom-Meeting: Meeting-ID: 875 9156 0011/ Kenncode: PK-21-HR
https://tu-dresden.zoom.us/j/87591560011?pwd=YU1mZTIzM1U2akdab1J2UmVhSGM1QT09

Leitung: Prof. Dr. Hannes Lichte

Kurzfassung: A novel theory is outlined which represents a promising alternative to the Standard Model and to the Dirac theory of the electron and explains the origin of the spin, the mass, and the charge of elementary particles, the electron in particular which resembles a four-dimensional top composed of two photons with opposite helicity. The resulting forces originated from the associated hyper-symmetric potential. The 4D rotational Hamiltonian depends on the 4D radius and on three angles, one of which is imaginary. This angle describes the rotation of the time-like axis of the Minkowski space with respect to the 3D representing a Lorentz transformation. Elementary particles with opposite angular momentum attract each other forming massive particles. The results show that massive particles can only be stable if they have a characteristic four-dimensional elementary radius. This radius is an eigenvalue of the rotational energy, which determines the mass of the particle. The results show that the left and right-handed space-time rotation determines the sign of the charge and the eigenvalues of the 4D radial wave equation the mass of the compound particle. Hence, the novel theory explains the origin of mass without needing the Higgs field. We demonstrate the feasibility of the novel theory by revisiting the hydrogen atom. The resulting fine-structure formula differs from that derived obtained by the Dirac theory by accounting for the Lamb shift.

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